

REMARKS

This paper is filed in response to the Final Office Action mailed July 10, 2009 and is being filed prior to the 2-month deadline for response.

Claims 82-90, 92, and 102-106 are pending in this application. Claims 82-88, 90, 92, and 102-106 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over an article by Adelstein et al ("Adelstein") in view of the knowledge of one of ordinary skill in the art. Claim 89 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Adelstein in view of an article by R.L. Hollis and S.E. Salcudean ("Hollis").

Applicant respectfully traverses each basis of rejection and requests reconsideration in view of the remarks below.

I. § 103(a) – Adelstein – Claims 82-88, 90, 92, and 102-106

Applicant respectfully traverses the rejection of claims 82-88, 90, 92 and 102-105 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Adelstein.

To sustain a rejection of a claim under 35 U.S.C. § 103(a), the scope and content of the prior art must disclose or suggest the claimed invention. *See* M.P.E.P. § 2141, 2143.

Claim 82 is patentable over Adelstein because Adelstein does not disclose "the linkage further configured to allow the manipulandum to move in a translational degree of freedom through an aperture of a portion of the linkage along the longitudinal axis" as recited in claim 82.

In response to Applicant's arguments made in the response to Office Action submitted on May 12, the Examiner argued that Adelstein inherently discloses a movement of a manipulandum in a translational degree of freedom along a longitudinal axis. Specifically, the Examiner states:

This argument is also not persuasive because the thrust bearing discussed in the first full paragraph on page 8 clearly allows some movement in the longitudinal axis even though the thrust bearing would inhibit movement long the longitudinal axis. Applicant has not claimed a range of movement outside of the range allowed for by the thrust bearing. Applicant has not

claimed any use for having movement along the longitudinal axis while Adelstein has discussed use for having movement tangential to the longitudinal axis by "measurement of interface forces tangent to the two dimensional manipulandum workspace". See Baer, US Patent No. 4,976,008, in the Abstract and at column 2 lines 22 and 41, column 6 line 24, column 7 line 51, and column 8 line 54 which describes a thrust bearing inhibits but not prevents longitudinal movement.¹

Regarding the disclosure of longitudinal movement, each portion of Baer cited by the Examiner states that the thrust bearing "inhibits" relative longitudinal movement, but not that it prevents longitudinal movement. To the contrary, "inhibit" means "to restrain or hold back; prevent" (emphasis added) and "to prohibit; forbid."² Thus, Baer discloses that its thrust bearings inhibit, or prevent, longitudinal movement. Therefore, one of skill in the art with knowledge of Baer would understand that the Adelstein thrust bearings prevent longitudinal movement.

However, even if Adelstein does disclose or suggest that its mechanical linkage allows some minor movement along a longitudinal axis, it does not disclose or suggest that such movement is through an aperture.

With respect to "a translational degree of freedom through an aperture of a portion of the linkage along the longitudinal axis", the Examiner does not allege that Adelstein discloses or suggests translational degrees of freedom through an aperture portion of a linkage along the longitudinal axis. Rather, the Examiner alleges that Adelstein generally discloses more than 2 degrees of freedom:

Adelstein does not fully teach the linkage further configured to allow the manipulandum to move in a translational degree of freedom through an aperture of a portion of the linkage along the longitudinal axis. However: Adelstein teaches 6 dof and 7 dof joysticks, see page 3 under the heading of Degrees of Freedom: "Adelstein teaches adding a joystick between handle and shaft, see page 8 second column first full paragraph. A two axis strain gauge based 'finger-force' miniature joystick (Model 469120LB; Measurement Systems, Norwalk, CT), combined with a special thrust bearing decoupling mechanism, is embedded in the manipulandum linkage, between the handle shaft and the handgrip. This miniature joystick and decoupler arrangement allows measurement of interface forces tangent, to the two dimensional manipulandum workspace, without responding to pure moments applied at the handgrip."

¹ See Office Action mailed July 10, 2009 at p. 3.

² See The American Heritage Dictionary, Second College Edition, 661, Houghton-Mifflin Co. (1985).

Adelstein additionally teaches the location of the miniature joystick is open ended since it is embedded in the manipulandum linkage.³

None of these assertions discusses translational movement through an aperture along a longitudinal axis. General discussions of multiple degree-of-freedom manipulanda does not disclose or suggest such translational movement through an aperture as claimed. The Examiner appears to acknowledge this because with respect to discussing movement tangent to the rotational degrees of freedom, the Office Action states that “even slight movement allowed for by the ‘special thrust bearing decoupling mechanism’ meets the claim limitation ‘the linkage further configured to allow the manipulandum to move in a translational degree of freedom through an aperture of a portion of the linkage along the longitudinal axis.’” However, there is no citation to disclosure of translational movement through an aperture in Adelstein, only a conclusory statement that such a feature is disclosed.

Therefore, because the Adelstein thrust bearings prevent longitudinal movement as discussed above, and because Adelstein does not disclose or suggest that any translational movement along a longitudinal access is through an aperture as recited in claim 82, claim 82 is patentable over Adelstein. Applicant respectfully requests the Examiner withdraw the rejection of claim 82.

The Examiner’s rejection of independent claim 90 is essentially the same as for the rejection of claim 82. However, claim 90 recites “a manipulandum having a shaft oriented along a longitudinal axis ... [and] a first member coupled to the shaft of the manipulandum and having an aperture configured to allow the manipulandum to move along the longitudinal axis...” As discussed above, the Adelstein’s thrust bearings are configured to prevent longitudinal movement, in contrast to the claim element that is configured to allow longitudinal movement. Further Adelstein does not disclose or suggest an aperture configured to allow translational movement along a longitudinal axis as recited in claim 90. Thus, claim 90 is patentable over Adelstein in view of the asserted skill of one of ordinary skill in the art.

Because claims 83-88, 92, and 102-105 depend from and further limit one of claims 82 or 90, each of claims 83-88, 92, and 102-106 are patentable over Adelstein in

³ See Office Action mailed July 10, 2009 at p. 6.

view of the asserted skill of one of ordinary skill in the art for at least the same reasons. Applicant respectfully requests the Examiner withdraw the rejection of claims 83-88, 92, and 102-106.

II. § 103(a) – Adelstein in view of Hollis – Claim 89

Applicant respectfully traverses the rejection of claim 89 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Adelstein in view of Hollis.

To sustain a rejection of a claim under 35 U.S.C. § 103(a), the scope and content of the prior art must disclose or suggest the claimed invention. *See* M.P.E.P. § 2141, 2143.

Claim 89 depends from and further limits claim 82. As explained above, Adelstein in view of the skill in the art does not disclose or suggest all of the limitations of claim 82. Hollis does not cure the deficiencies of Adelstein in view of one skill in the art. The Examiner has introduced Hollis to teach a voice coil as an example of a Lorentz motor. However, Hollis does not disclose or suggest “the linkage further configured to allow the manipulandum to move in a translational degree of freedom through an aperture of a portion of the linkage along the longitudinal axis” as recited in claim 82, from which claim 89 depends. Thus, the combination of Adelstein, Hollis, and the asserted knowledge of one of ordinary skill in the art do not disclose or suggest “the linkage further configured to allow the manipulandum to move in a translational degree of freedom through an aperture of a portion of the linkage along the longitudinal axis.” Therefore, claim 89 is patentable over the combined references. Applicant respectfully requests the Examiner withdraw the rejection of claim 89.

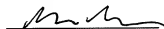
CONCLUSION

Applicant respectfully asserts that in view of the amendments and remarks above, all pending claims are allowable and Applicant respectfully requests the allowance of all claims.

Should the Examiner have any comments, questions, or suggestions of a nature necessary to expedite the prosecution of the application, or to place the case in condition for allowance, the Examiner is courteously requested to telephone the undersigned at the number listed below.

Respectfully submitted,

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